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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/743,270	12/23/2003	Levinus Pieter Bakker	081468-0307112	4454
909	7590	01/12/2005	EXAMINER	
PILLSBURY WINTHROP, LLP			NGUYEN, HUNG	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/743,270

Applicant(s)

BAKKER, LEVINUS PIETER

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 December 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-7, 9-23, 24, 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Silfvast et al (U.S.Pat. 6,232,613).

With respect to claims 1, 7, 19, 21-22, 27-29, Silfvast et al discloses a lithographic projection apparatus and corresponding method(see col.3, lines 1-4) and comprising all basic features of the instant claims: an electrode (10, 30) and voltage source (V) that applies an electric field between the radiation source and the electrode to generate a discharge between the radiation source and the electrode to capture contaminant particles from the radiation source. It is noted that although Silfvast et al does not specifically disclosed the claimed radiation source, a support structure for supporting a patterning structure, a substrate support for supporting a substrate, and a projection system for projecting the patterned beam onto the substrate. These features are seen to be inherent teachings of the lithographic projection apparatus and they must be present for the apparatus to function as intended.

As to claim 2, Silfvast teaches that the electrode is positioned in the beam of radiation (see figure 1).

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With respect to claims 3-4, Silfvast discloses a contaminant barrier (405) disposed downstream, relative to the direction of propagation of the beam of radiation of the radiation source (see figure 5).

Regarding claim 5-6, and 24, Silfvast teaches the electrode is a hollow cathode (see col.5, lines 65 thru col.6 line 3).

As to claims 10-13, Silfvast further discloses a gas provided in a region traversed by the beam of radiation and the gas comprises at least of one the extreme ultraviolet transparent gas such as He, Ar, Nitrogen and hydrogen (see col.6, lines30-35).

As to claims 15-18, Silfvast et al discloses the apparatus comprises a laser-produced, or discharge radiation source or radiation source comprises a wavelength of about 157 nm or about 126nm, or about 8nm to about 20nm or about 9nm to about 16nm (see claims 2-5 or Silfvast et al).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 8, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Silfvast et al (U.S.Pat. 6,232,613) in view of Moors et al (U.S.Pat. 6,781,673).

With respect to claims 8, 23, and 25, Silfvast et al discloses substantially all of the limitations of the instant claims as discussed. Silfvast et al does not expressly disclose the

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voltage source for generating the electric field being a square-wave modulated electric field and synchronized with the radiation or the electric field between the radiation source and the electrode having a voltage different up to about 100V. Moors et al discloses a projection apparatus where an electric field is provided to capture contaminant particles and Moors et al suggests that voltage source is arranged to generate a field strength of about 100 to 500 V/cm and may have a frequency of about 1 to 10 MHz (see col.9, lines 29-30). It would have been obvious to combine the teachings of Silfvast et al and Moor et al to obtain the invention as specified in the above claims. In view of Moors's suggestion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize a square-wave modulated electric field that is synchronized with the radiation source, as well as, to generate the electric field having a voltage difference up to about 1000V, in the device of Silfvast et al, for at least the purpose of providing a proper electric field and efficiently capturing the contaminant particles from the radiation source.

Prior Art Made of Record

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

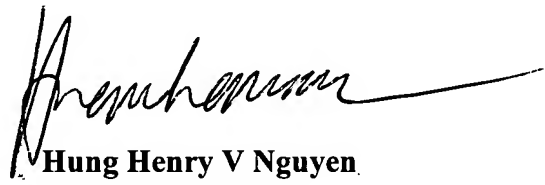
Furaciari et al (U.S.Pat. 6,714,624) discloses device for deflecting debris generated in an EUV apparatus.

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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 571-272-2124. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on 571-272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Hung Henry V Nguyen
Primary Examiner
Art Unit 2851

hvn
1/6/04